THE INTRINSIC DIELECTRIC CONSTANT OF SALICYLIC ACID AND BENZOIC ACID

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The experimental arrangement* consists of a slotted coaxial transmission line fed by an ultra high frequency unit oscillator of General Radio Company. The powdered sample is packed into a specially designed dielectric cell terminating one end of the transmission line.

The measurements are made by the standing wave method of Roberts and von Hippel (1946). The technique of square wave amplitude modulation is employed to improve the sensitivity of measurements.

Experiments are conducted over a range of volume fractions for each of the two organic substances. The apparent dielectric constants are then computed by the formula of Dakin and Works (1947). To evaluate the intrinsic dielectric constant ϵ_i from the logarithmic formula of Rabinovitch (1964),

$$\log \epsilon_A = P \log \epsilon_i + K$$

graphs are drawn for the two substances taking P, the volume fraction, on the X axis and the apparent dielectric constant ϵ_A on the Y axis. Linear plots shown in Fig. 1(a) and (b) are obtained. The intercept (not shown in the figures) on the

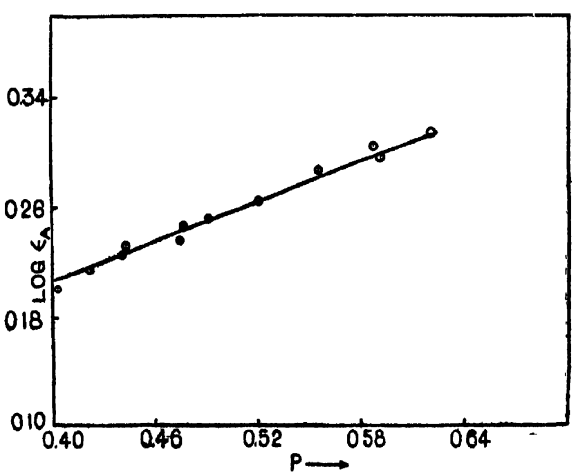

FIGURE 1(a)

Variation of log ϵ_A with P for Benzoic acid.

* K. S. Ramakrishna Rao collaborated with the author in setting up this arrangement.

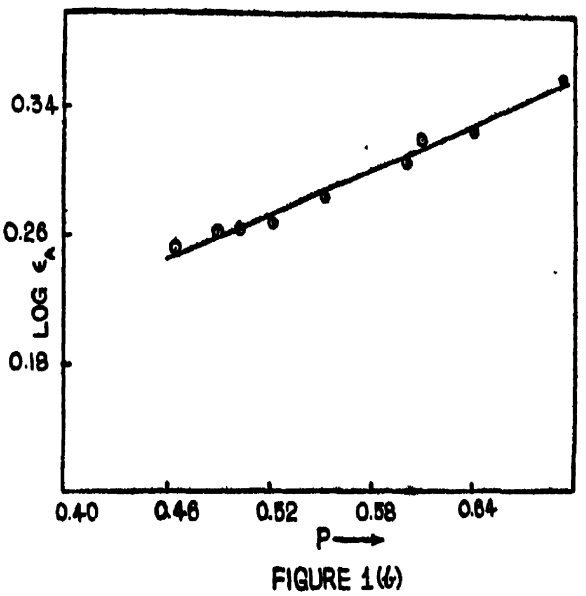

FIGURE 1(6)

Variation of log ϵ_A with P for Salicylic acid.

Y axis gives the value of 'k'. The intrinsic dielectric constants obtained are given in Table I. Details of the experimental method will be reported shortly.

TABLE I.

Substance	Intrinsic dielectric constant
Benzoic Acid	3 02
Salicylic Acid	2.95

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